

Remarks

I. Introduction

This is in response to the Office Action dated August 20, 2004. The Office Action rejected claims 14, 21, 26, 27, 28 and 31 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 19 of U.S. Patent No. 5,974,028. Claim 19 was rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 19 of U.S. Patent No. 5,974,028 in view of U.S. Patent Number 5,010,553. Claims 14-16, 21, 24 and 25-33 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,245,616 (Olson). Claims 17, 18, 22 and 23 were rejected under 35 U.S.C. §103(a) as being unpatentable over Olson in view of RFC 2018. Claims 19 and 20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Olson in view of U.S. Patent No. 5,010,553 (Scheller et al.).

In response to the double patenting rejection, Applicant submits herewith a terminal disclaimer under 37 C.F.R. §1.321(c).

Applicant traverses the rejections under 35 U.S.C. §103.

Applicant cancels claims 28-30 herein. Claims 1-13 have been previously cancelled. Claims 14-27 and 31-33 remain for consideration.

II. Obviousness-Type Double Patent Rejection

In response to the obviousness-type double patenting rejection, Applicant is filing herewith a terminal disclaimer under 37 C.F.R. §1.321(c). Withdrawal of the obviousness-type double patenting rejection is requested.

III. Rejections under 35 U.S.C. §103

As described in the application background, transport protocols generally assume congestion in the network to be the primary cause for packet losses and unusual delays. When transmitted packets fail to be received for reasons other than congestion, however, congestion compensation measures, such as

reducing the window size, result in an unnecessary reduction in end-to-end throughput and suboptimal performance. While several approaches have been suggested to avoid performance degradation where non-congestion errors predominate, those approaches have several shortcomings as described in the application background.

The present invention provides an improved technique, and in one embodiment avoids sending duplicate acknowledgments and invoking a congestion mechanism when packets are received with bit errors due to lossy links and not due to congestion. More particularly, independent claim 14 claims a method for improving TCP performance and comprises the steps of:

identifying at least one received packet having a bit error; and
if all packets for a window size are received, sending a selective acknowledgement indicating that said at least one received packet has a bit error and suppressing duplicate acknowledgements.

Thus, in accordance with the invention of claim 14, if all packets for a window size are received, then a selective acknowledgment is sent and **duplicate acknowledgements are suppressed**.

Independent claim 14 was rejected under §103 as being unpatentable over Olson. In order to show a prima facie case of obviousness under 35 U.S.C. §103(a), there must be a showing of some suggestion to combine or modify one or more prior art references in a manner which would show or suggest the claimed invention. In the present case, the Examiner rejected claim 14 as obvious over a single reference. Such a rejection requires specific evidence in the prior art which would suggest a modification of the single reference which would result in the claimed invention.

The Olson reference does not disclose nor suggest the step of suppressing duplicate acknowledgments, and the Office Action has not cited any section of Olson that discloses this limitation of claim 14. Therefore, an obviousness rejection under Olson requires some specific evidence of prior art which would suggest such a modification. However, in rejecting claim 14, the

Office Action merely states that “one skilled in the art would have been motivated to “suppress duplicate acknowledgements” in the TCP connection to maintain the current size of the window for throughput”. The Office Action provides no evidence whatsoever to support this statement. A mere conclusory statement to the effect that a claim element would be an obvious modification is insufficient to support a rejection under §103. As described in the application, duplicate acknowledgements and the resultant invocation of a congestion control mechanism was a problem in the prior art. This problem is solved by the invention of claim 14. The Office Action has provided no evidence that the prior art suggests this solution to the problem as set forth in claim 1. As such, withdrawal of the rejection of claim 14 is requested.

Independent claim 19 is directed to another embodiment of the invention. More particularly, claim 19 contains the limitations of “each of said packets having a payload without error correction bits and a header ... having error correction bits”. In addition, claim 19 contains the limitation of “correcting said bit error if the bit error occurs within said packet header”. Claim 19 was rejected under 35 U.S.C. §103(a) as being unpatentable over Olson in view of Scheller et al. However neither of the references, either alone or in combination, discloses the error correction aspects of the invention as claimed in claim 19. The Office Action, in rejecting claim 19, seems to rely on Scheller et al. for the error correction aspects of the invention. However, Scheller et al. fails to disclose the claimed limitations.

First, there is no disclosure in Scheller et al. of a packet having a payload without error correction bits and a header with error correction bits. Scheller et al. instead discloses at col. 5, lines 1-15 and col. 6, lines 50-60, a packet having two separate cyclic redundancy codes (CRC), one for the header and one for the entire packet. However, as is well known, and as is described at col. 1, lines 39-49, a CRC is used to determine whether an error has occurred, but is not used to correct an error. Thus, while the CRC bits may be considered error detection bits, they are not “error correction bits” as claimed in claim 19. While Scheller et al. also discloses the use of forward error correction (FEC) bits, the use of error

correction bits in Scheller et al. is different from that claimed in claim 19. As disclosed at col. 5, lines 7-15, Scheller et al. discloses the use of FEC in connection with the "FEC encoded data" but not in connection with the header information. This is the opposite of the configuration of claim 1 which claims a "payload without error correction bits and a header ... having error correction bits". Scheller et al. cannot render this claim obvious because Scheller et al. discloses a **payload with** error correction bits and a **header without** error correction bits. This difference is further evidenced by Scheller et al. at col. 6, lines 50-59 where the Scheller et al. technique indicates that if the CRC of the header indicates an error in the header, then an immediate resend is requested rather than performing further processing (i.e., error correction) on the header. Thus, Scheller et al. teaches away from the claim 19 step of "correcting said bit error if the bit error occurs within said packet header". Instead, if Scheller et al. detects an error in the header, it requests a resend rather than performing any error correction on the header. Thus, the combination of Scheller et al. and Olson would not result in the invention of claim 19. Therefore, for these reasons, claim 19 is allowable over the cited art and withdrawal of the rejection under §103 is requested.

Independent claim 21 is directed to another embodiment of the invention and contains the limitations of:

- determining a non-congestion bit error for at least one packet from the plurality of packets; and
- sending a selective acknowledgment associated with said at least one packet having a non-congestion bit error without invoking a congestion control mechanism.

Claim 21 was rejected on the same basis as claim 14. However, claim 21 contains limitations which are different from claim 14, and these limitations are not addressed by the Office Action. In particular, claim 21 contains the limitation of "sending a selective acknowledgment associated with said at least one packet having a non-congestion bit error **without invoking a congestion control mechanism**". The Office Action does not cite any portion of Olson which discloses "without invoking a congestion control mechanism" with the "sending a

selective acknowledgment associated with said at least one packet having a non-congestion bit error". As described above, the present invention solves the problems of the prior art by not invoking a congestion mechanism when packets are received with bit errors due to lossy links and not due to congestion. There is no suggestion of this claimed step on Olsen, and the Office Action has failed to show any motivation to modify Olsen to contain this limitation. If the Examiner persists in this rejection of claim 21, Applicant requests that the Examiner cite specific portions of Olsen that disclose these claim limitations so that Applicant may fully respond to the rejection. For these reasons, and the reasons discussed above in connection with claim 14, claim 21 is allowable over the cited art.

Independent claim 26 is allowable for the reasons discussed above in conjunction with claim 14.


Independent claims 27 and 31 are allowable for the reasons discussed above in conjunction with claim 21.

For the reasons discussed above, all independent claims are allowable over the cited art. Allowance of all independent claims is requested. All remaining dependent claims are dependent upon an allowable independent claim and are therefore also allowable.

IV. Conclusion

For the reasons discussed above, all pending claims are allowable over the cited art. Reconsideration and allowance of all claims is respectfully requested.

Respectfully submitted,



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